Attorney Docket No. 2003P00282WOUS

UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Frank Joerdens et al.
Application Number:	10/550,219
Filing Date:	05/19/2006
Group Art Unit:	1796
Examiner:	Shane Fang
Title:	VITREOUS PRINTING BY MEANS OF A SILK SCREEN PROCESS

Mail Stop Appeal Brief - Patents

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

APPEAL BRIEF

Pursuant to 37 CFR 1.192, Appellants hereby file an appeal brief in the above-identified application. This Appeal Brief is accompanied by the requisite fee set forth in 37 CFR 1.17(f).

This brief is being filed within 30 days of the Notice of Panel Decision from Pre-Appeal Brief Review dated August 2, 2010.

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(1) REAL PARTY IN INTEREST

The real party in interest is BSH Bosch und Siemens Hausgeräte GmbH, a corporation of the country of Germany. The assignment was recorded on Reel/Frame: 017629/0460.

(2) RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) STATUS OF CLAIMS

Claims 1-20 are cancelled. Claims 21-42 are pending in the present application and have been finally rejected. The final rejection of claims 21-42 is being appealed. Claims 21, 30 and 38 are independent.

(4) STATUS OF AMENDMENTS

In response to the Final Rejection dated March 26, 2010, Appellants filed a Notice of Appeal, Pre-Appeal Brief Request for Review and Statement of Arguments traversing the rejections on June 15, 2010. There have been no amendments since the final Office Action of March 26, 2010.

(5) SUMMARY OF CLAIMED SUBJECT MATTER

The invention relates to an enamel-free paste with a matrix based upon a Si-polymer. Another aspect of the present invention relates to a method for the production of this paste. Finally, another aspect of the invention relates to a silkscreen process for the application of decorative prints using this paste.

Printing pastes with an organic basis are resistant only up to about 300°C due to their polymer matrix. At higher temperatures an oxidative decomposition of the binding agents begins to form, which leads to the optical and also the mechanical destruction of the print.

Due to the thermal load of the glass windows in ovens (temperatures of 400-420°C) common organic printing pastes for the opaque covering of translucent panes in/on household appliances are eliminated.

The claimed paste, methods, and silk screening process solves the problem by providing a paste suitable for the silkscreen process, with a good storage stability, which is suitable for opaquely imprinting glass (panes), in particular pre-stressed borosilicate glass (panes). Due to the requirement of being suitable for the silkscreen process, an additional requirement is demanded of the paste: it must have a sufficiently long life in the screen. The printed borosilicate glass must have a mechanical stability that is sufficiently well enough in order to ensure an error-free operation in, for example, an oven, further must not contain any physiologically precarious heavy metals, or their oxides, respectively, and also must not release any harmful emissions (e.g. in the form of decomposition products) even during the operation at temperatures of up to 400 or 420°C, but should certainly be thermally resistant at these temperatures. The material should be able to be combined with glass, in particular borosilicate glass, and able to be processed at burning-in temperatures, which do not adversely affect the thermal pre-stressing of the glass to be imprinted. The prints should also have an adequate acutance and scratch resistance, a sufficiently large optical density (opaque), and a good adhesion to the glass, and all this, of course, at the operating temperatures of up to 420°C.

The inventors have succeeded in developing paste, methods, and silk screening process that achieve these goals by means of an enamel-free paste with a matrix based upon a Si-polymer that can be obtained by the hydrolysis and condensation of at least one silane of a general formula $R_xSi(OR')_{4-x}$ with at least one polysiloxane of general formula $[R_2SiO]_y$, or $R_3Si\text{-}(O\text{-}SiR_2)_y\text{-}O\text{-}SiR_3$, respectively. Radicals R can independently be alkyl, aryl, arylalkyl, alkylaryl or H. Radical R' can independently be H, methyl, ethyl, n- or i-propyl, n-, iso-, sec- or tert-butyl. "x" represents 0 or 1 (for the first silane). "x" represents 0, 1, 2, 3, or 4. "y" represents a whole number, which is at least 2 and can be approximately infinite. Further, the

paste additionally includes a high-boiling organic solvent with a boiling point of 100°C or above, and a pigment as the solvent, but contains no alcohol with a boiling point of substantially below 100°.

Specific Support for Independent Claims

Independent claim 21 defines an enamel-free paste with a matrix based upon a Si-polymer that can be obtained by the hydrolysis and condensation of at least one silane of a general formula $R_xSi(OR')_{4-x}$ with at least one polysiloxane of general formula $[R_2SiO]_y$, or $R_3Si\text{-}(O\text{-}SiR_2)_y\text{-}O\text{-}SiR_3$, respectively. [Page 10, lines 20-27.] Radicals R can independently be alkyl, aryl, arylalkyl, alkylaryl or H. [Page 10, lines 28-29.] Radical R' can independently be H, methyl, ethyl, n- or i-propyl, n-, iso-, sec- or tert-butyl. [Page 10, lines 30-31.] "x" represents 0 or 1 (for the first silane). [Page 10, line 32.] "x" represents 0, 1, 2, 3, or 4. [Page 10, lines 33-34.] "y" represents a whole number, which is at least 2 and can be approximately infinite. [Page 10, lines 35-36.] Further, the paste additionally includes a high-boiling organic solvent with a boiling point of 100°C or above, and a pigment as the solvent, but contains no alcohol with a boiling point of substantially below 100°. [Page 11, lines 7-9, 13-25.]

Independent claim 30 defines a method for the production of an enamel-free paste with a matrix based upon a Si-polymer that can be obtained by the hydrolysis and condensation of at least one silane of a general formula $R_xSi(OR')_{4-x}$ with at least one polysiloxane of general formula $[R_2SiO]_y$, or $R_3Si\text{-}(O\text{-}SiR_2)_y\text{-}O\text{-}SiR_3$, respectively. [Page 10, lines 20-27.] Radicals R can independently be alkyl, aryl, arylalkyl, alkylaryl or H. [Page 10, lines 28-29.] Radical R' can independently be H, methyl, ethyl, n- or i-propyl, n-, iso-, sec- or tert-butyl. [Page 10, lines 30-31.] "x" represents 0 or 1 (for the first silane). [Page 10, line 32.] "x" represents 0, 1, 2, 3, or 4. [Page 10, lines 33-34.] "y" represents a whole number, which is at least 2 and can be approximately infinite. [Page 10, lines 35-36.] Further, the paste additionally includes a high-boiling organic solvent with a boiling point of 100°C or above, and a pigment as the solvent, but contains no alcohol with a boiling point of substantially below 100°. [Page 11, lines 7-9, 13-25.] The method comprising the steps of: (a) converting at least one silane of a

general formula $R_xSi(OR')_{4-x}$ via hydrolysis and condensation with at least one polysiloxane of a general formula at least one of $[R_2SiO]_y$ or $R_3Si\text{-}(O\text{-}SiR_2)_y\text{-}O\text{-}SiR_3$, respectively; (b) adding at least one pigment one of before, during or after step (a); (c) adding a high-boiling organic solvent with a boiling point of at least 100°C to the mixture of one of step (a), or step (b), respectively; and (d) removing the water and/or alcohol formed during said hydrolysis and condensation from the mixture obtained in step (c). [Page 12, lines 5-22]

Independent claim 38 defines a silkscreen process for the application of decorative prints on glass to be thermally stressed. [Page 8, lines 8-16 and page 15 lines 4-8.] The process comprises applying an enamel-free paste. [Page 15 lines 4-8.] The enamel-free paste has a matrix based upon a Si-polymer that can be obtained by the hydrolysis and condensation of at least one silane of a general formula $R_xSi(OR')_{4-x}$ with at least one polysiloxane of general formula $[R_2SiO]_y$, or $R_3Si\text{-}(O\text{-}SiR_2)_y\text{-}O\text{-}SiR_3$, respectively. [Page 10, lines 20-27.] Radicals R can independently be alkyl, aryl, arylalkyl, alkylaryl or H. [Page 10, lines 28-29.] Radical R' can independently be H, methyl, ethyl, n- or i-propyl, n-, iso-, sec- or tert-butyl. [Page 10, lines 30-31.] "x" represents 0 or 1 (for the first silane). [Page 10, line 32.] "x" represents 0, 1, 2, 3, or 4. [Page 10, lines 33-34.] "y" represents a whole number, which is at least 2 and can be approximately infinite. [Page 10, lines 35-36.] Further, the paste additionally includes a high-boiling organic solvent with a boiling point of 100°C or above, and a pigment as the solvent, but contains no alcohol with a boiling point of substantially below 100°. [Page 11, lines 7-9, 13-25.] The enamel paste is applied onto the glass to be decorated. [Page 15 lines 4-8.] The paste and glass is subjected to a thermal burning-in. [Page 15 lines 4-11.]

Dependent claim 39 further specifies that the "burning-in" of the silkscreen process of claim 38 (listed above) occurs substantially at about 250-280°C. [Page 7, lines 33-35]

Dependent claim 40 further specifies that the "burning-in" of the silkscreen process of claim 38 (listed above) is preceded by a drying step substantially at about 150 to 180°C in

order to remove at least said high-boiling organic solvent, as well as possibly said thickener, or said thixotroping agent. [Page 15, lines 13-24]

(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether claims 21-38 and 41-42 are unpatentable under 35 U.S.C. §102(b) over Kalleder (WO 01/23190) as evidenced by Yoshida (U.S. Patent 5,667,888) and Levasil (H.C. Stark product list, 09/2006).

B. Whether claims 39-40 are unpatentable under 35 U.S.C. §103(a) over Kalleder (WO 01/23190) as evidenced by Yoshida (U.S. Patent 5,667,888) and Levasil (H.C. Stark product list, 09/2006).

(7) ARGUMENT

A. Claims 21-38 and 41-42 are not unpatentable under 35 U.S.C. §102(b) over Kalleder as evidenced by Yoshida and Levasil.

Claims 21-38 and 41-42 are not anticipated by Kalleder at least because Kalleder does not disclose all of the limitations of the claims. The claimed inventions are directed to fully hydrolyzed and fully condensed enamel-free pastes. Claims 21, 30 and 38 are independent. Claim 21 is directed to an enamel-free paste, claim 30 is directed to a method for the production of the enamel free paste, and claim 38 is directed to a silkscreen process for the application of decorative prints on glass by applying an enamel-free paste. Each one of the independent claims refers to, inter alia, an enamel-free paste with a matrix based upon a Si-polymer that can be obtained by the hydrolysis and condensation of at least one silane of a general formula $R_xSi(OR')_{4-x}$ with at least one polysiloxane of general formula $[R_2SiO]_y$, or $R_3Si\text{-}(O\text{-}SiR_2)_y\text{-}O\text{-}SiR_3$, respectively, wherein said radicals R can independently be alkyl, aryl, arylalkyl, alkylaryl or H, said radicals R' can independently be H, methyl, ethyl, n- or i-propyl, n-, iso-, sec- or tert-butyl, x represents 0 or 1 (for the first silane), x represents 0, 1, 2, 3, or 4, and y represents a whole number, which is at least 2 and can be approximately infinite,

wherein said paste additionally includes a high-boiling organic solvent with a boiling point of 100°C. or above, and a pigment as the solvent, but contains no alcohol with a boiling point substantially below 100°C.

Appellants' enamel-free pastes do not suffer from the disadvantages of conventional enamel pastes. As stated in page 2, lines 21-33 of Appellants' Specification, enamel pastes in a classical enamel pattern

> "require temperatures of partially more than 500 for the burning-in process, however, in order to enable the glass flow of the frit. At these kinds of temperatures, however, substantial pre-stressing losses of the glass can occur. At the same time the aggressive glass frit microcracks inherent in manufacturing are enlarged, which are located in the glass surface. Both lead to a dramatic loss of stability of the pre-stressed Borofloat glass on one hand, and increase the risk of the glass breaking at the temperature usually present in pyrolysis ovens, or with impact forces, on the other hand. Furthermore, such classical enamel patterns provide an insufficient bond to the surface of Borofloat glass."

Enamel-free pastes of the claimed invention, in contrast to the prior art, do not suffer from these disadvantages.

As an added advantage, the independent claims are directed to a fully hydrolyzed and condensed enamel-free paste that is stable and suitable for silk screening process and suitable for opaquely imprinting glass and which do not emit harmful emissions. See, Appellants' Specification, page 7, lines 20-29 which is reproduced below:

> "The printed borosilicate glass must have a mechanical stability that is sufficiently well enough in order to ensure an error-free operation in, for example, an oven, further must not contain any physiologically precarious heavy metals, or their oxides, respectively, and also must not release any harmful emissions (e.g. in the form of decomposition products) even during the

operation at temperatures of up to 400 or 420°C., but should certainly be thermally resistant at these temperatures."

Claims 21-38 and 41-42 are not anticipated by Kalleder as evidenced by Yoshida and Levasil at least because these references are not directed to fully hydrolyzed and fully condensed enamel-free pastes. To reject claims under 35 U.S.C. §102(b), a prima facie case of anticipation must be established. See M.P.E.P. 2131. One requirement to establish the prima facie case of anticipation is that "each and every limitation as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Id. Kalleder, as evidenced by Yoshida and Levasil, fails to do so. Each independent claim refers to an enamel free paste that is 100% hydrolyzed and condensed. Independent claim 21 is directed to a fully hydrolyzed and condensed enamel-free paste, independent claim 30 is directed to a method for the production of a fully hydrolyzed and condensed enamel-free paste, and claim 38 is directed to a silkscreen process for the application of decorative prints on glass by applying a fully hydrolyzed and condensed enamel-free paste.

As stated above, each pending claim (including claims 21-38 and 41-42) refers to an enamel free paste that is 100% hydrolyzed and condensed. This is because all of the independent claims recite, as a limitation, an enamel-free paste with no alcohol with a boiling point substantially below 100°C. Since a by-product of hydrolysis and polycondensation is alcohol, this indicates that the claimed inventions set forth in independent claims 21, 30 and 38, and claims dependent thereon (i.e., all the claims), are directed to a paste with complete hydrolysis and complete condensation. This limitation involving a fully hydrolyzed and condensed enamel-free paste is not disclosed in Kalleder.

In contrast to the claimed invention, Kalleder does not teach, explicitly or implicitly, a fully hydrolyzed and condensed enamel-free paste. For example, Kalleder is directed to a priming paste which has partial hydrolysis and partial polycondensation of the hydrolysable compound. See columns 2 and 3 of Kalleder. Kalleder states that the degree of condensation is, for example, 20-80%, preferably 40-60%. In contrast, each of the pending claims refers to

an enamel-free paste with no alcohol with a boiling point substantially below 100°C. Since the pending claims refer to complete hydrolysis and condensation and Kalleder teaches partial condensation the claimed inventions are not anticipated by Kalleder.

In the final Office Action of March 26, 2010, the Examiner, in maintaining the rejection, has taken the position that the claimed invention "fails to claim 100% degree of condensation of the hydrolysis plus condensation." See, final Office Action, paragraph spanning pages 5 and 6. Appellants respectfully disagree and note that, as stated above, since the claims recite an enamel-free paste with no alcohol with a boiling point substantially below 100°C, one of ordinary skill in the art would understand that since alcohol is a condensation and hydrolysis by-product, a claim reciting no alcohol would be understood to mean that condensation and hydrolysis is complete.

In addition, the Examiner used an improper standard in maintaining the obviousness rejection in view of Appellants argument by stating that Kalleder shows that "the removal of ethanol by product is carried out via rotary evaporator and roll mill, and the ethanol would be inherently lower than 5%." See, final Office Action of March 26, 2010, paragraph spanning pages 5 and 6. This is an improper standard. All of the independent claims (claims 21, 30 and 38) have, inter alia, a limitation of an enamel-free paste with no alcohol with a boiling point of substantially below 100°C. This limitation is incorporated into each of the dependent claims because of their dependency. Appellants note that ethanol is just one of many alcohols with a boiling point substantially below 100°C. Appellants disagree with the Examiner's position because even if Kalleder disclosed ethanol (which is just one of many alcohols) being below 5%, it cannot be interpreted as Kalleder disclosing that all alcohols are below 5%. Furthermore, below 5% as allegedly disclosed by Kalleder is not the same as the pending claims' limitation of "no alcohol." Therefore, even if the Examiner's statement is correct in interpreting Kalleder as showing less than 5%, it still does not render the claimed invention involving "no alcohol" obvious.

The Examiner also cited Levasil for describing silica sol and Yoshida for referring to terpineol as a thickener. We note that these points do not cure Kalleder's failure to disclose an enamel free paste that is 100% hydrolyzed and condensed.

For at least the above-stated reasons, independent claims 21, 30 and 38 and claims dependent thereon which incorporated the limitations of the independent claims (i.e., claims 21-42) are not anticipated by Kalleder as evidenced by Yoshida and Levasil. The reversal of this anticipation rejection is respectfully requested.

B. Claims 39-40 are not unpatentable under 35 U.S.C. §103(a) over Kalleder as evidenced by Yoshida and Levasil.

To reject claims under 35 U.S.C. §103(a), a prima facie case of obviousness must be established. See M.P.E.P. 2142. One requirement to establish the prima facie case of obviousness is that the prior art references, when combined, must teach or suggest all claim limitations. See M.P.E.P. 2142; M.P.E.P. 706.02(j). Kalleder as evidenced by Yoshida and Levasil fails to do so. For example, as discussed above for the anticipation rejection, independent claim 38 is directed to a silkscreen process for the application of decorative prints on glass by applying a fully hydrolyzed and condensed enamel-free paste. The limitations of independent claim 38 are incorporated into dependent claims 39-40. These limitations, involving a fully hydrolyzed and condensed enamel-free paste, are not disclosed or rendered obvious by Kalleder.

As discussed above for the anticipation rejection, Kalleder teaches partial condensation of 20-80%. In fact, Kalleder states that it is preferable that the condensation is between 40% to 60%. See Kalleder, columns 2 and 3. Significantly, Kalleder fails to teach or suggest complete hydrolysis and condensation - a limitation of independent claim 38 and dependent claims 39-40. In fact, by teaching that partial hydrolysis and partial polycondensation are preferable, Kalleder teaches away from the claimed invention directed to complete hydrolysis and condensation. The addition of Levasil and Yoshida does not cure

the defects of Kalleder because they are also silent on the point of complete hydrolysis and condensation. Thus, because a combination of the cited references (Kalleder, Yoshida and Levasil) fails to disclose or render obvious the limitation of complete hydrolysis and condensation and, in fact teaches away from complete hydrolysis and condensation, an obviousness rejection is improper.

For the reasons stated above, claims 39-40 are not obvious in view of the cited references and the reversal of this rejection is respectfully requested.

(8) CONCLUSION

In view of the foregoing discussion, Appellants respectfully request reversal of the Examiner's rejection.

Respectfully submitted,

/James E. Howard/

James E. Howard
Registration No. 39,715
August 18, 2010

BSH Home Appliances Corporation
100 Bosch Blvd.
New Bern, NC 28562
Phone: 252-639-7644
Fax: 714-845-2807
james.howard@bshg.com

CLAIMS APPENDIX

Claims 1-20. (Canceled).

21. (Rejected) An enamel-free paste with a matrix based upon a Si-polymer that can be obtained by the hydrolysis and condensation of at least one silane of a general formula $R_xSi(OR')_{4-x}$ with at least one polysiloxane of general formula $[R_2SiO]_y$, or $R_3Si\text{-}(O\text{-}SiR_2)_y\text{-}O\text{-}SiR_3$, respectively, wherein:

said radicals R can independently be alkyl, aryl, arylalkyl, alkylaryl or H;

said radicals R' can independently be H, methyl, ethyl, n- or i-propyl, n-, iso-, sec- or tert-butyl;

x represents 0 or 1 (for the first silane);

x represents 0, 1, 2, 3, or 4; and

y represents a whole number, which is at least 2 and can be approximately infinite;

wherein said paste additionally includes a high-boiling organic solvent with a boiling point of 100°C or above, and a pigment as the solvent, but contains no alcohol with a boiling point of substantially below 100°.

22. (Rejected) The paste according to claim 21, wherein x represents 1 for said first silane.

23. (Rejected) The paste according to claim 21, wherein the total content of said paste of water and alcohols with a boiling point of below 100°C, based on the total mass of said paste when finished, is less than substantially about five (5) percent (%).

24. (Rejected) The paste according to claim 21, wherein said pigments are temperature resistant inorganic pigments.

25. (Rejected) The paste according to claim 21, wherein said temperature resistant inorganic pigments are graphite or TiO_2.

26. (Rejected) The paste according to claim 21, wherein said paste further includes dispersed nanoparticles, and a catalyst, which has initiated the hydrolysis and condensation of silane(s) and polysiloxane(s).

27. (Rejected) The paste according to claim 21, wherein said paste additionally includes at least one of a thickener and a thixotroping agent.

28. (Rejected) The paste according to claim 21, wherein R' represents H, methyl, or ethyl.

29. (Rejected) The paste according to claim 21, wherein said at least one silane is methyl triethoxysilane and tetraethoxysilane.

30. (Rejected) A method for the production of an enamel-free paste with a matrix based upon a Si-polymer that can be obtained by the hydrolysis and condensation of at least one silane of a general formula $R_xSi(OR')_{4-x}$ with at least one polysiloxane of general formula $[R_2SiO]_y$, or $R_3Si\text{-}(O\text{-}SiR_2)_y\text{-}O\text{-}SiR_3$, respectively, including

said radicals R can independently be alkyl, aryl, arylalkyl, alkylaryl or H;

said radicals R' can independently be H, methyl, ethyl, n- or i-propyl, n-, iso-, sec- or tert-butyl;

x represents 0 or 1 (for the first silane);

x represents 0, 1, 2, 3, or 4; and

y represents a whole number, which is at least 2 and can be approximately infinite;

wherein said paste additionally includes a high-boiling organic solvent with a boiling point of 100°C or above, and a pigment as the solvent, but contains no alcohol with a boiling point of substantially below 100°C;

said method comprising the steps of:

(a) converting at least one silane of a general formula $R_xSi(OR')_{4-x}$ via hydrolysis and condensation with at least one polysiloxane of a general formula at least one of $[R_2SiO]_y$ or $R_3Si\text{-}(O\text{-}SiR_2)_y\text{-}O\text{-}SiR_3$, respectively;

(b) adding at least one pigment one of before, during or after step (a);

(c) adding a high-boiling organic solvent with a boiling point of at least 100°C to the mixture of one of step (a), or step (b), respectively; and

(d) removing the water and/or alcohol formed during said hydrolysis and condensation from the mixture obtained in step (c).

31. (Rejected) The method according to claim 30, wherein said hydrolysis and condensation in step (a) occur in the presence of at least one of a thickener, or thixotroping agent, respectively.

32. (Rejected) The method according to claim 30, wherein said thickener, or said thixotroping agent, respectively, is added after said hydrolysis and condensation of step (a).

33. (Rejected) The method according to claim 30, wherein said hydrolysis and condensation in step (a) occur in the presence of a catalyst.

34. (Rejected) The method according to claim 30, wherein said hydrolysis and condensation in step (a) occur in the presence of a finely dispersed filler.

35. (Rejected) The method according to claim 30, wherein said finely dispersed filler is added after said hydrolysis and condensation of step (a).

36. (Rejected) The method according to claim 30, wherein said removal of said water/alcohol formed in step (a) occurs by at least one of means of distillation or by means of precipitation of the binder phase formed in step (a).

37. (Rejected) The method according to claim 30, wherein step (c) occurs before step (d).

38. (Rejected) A silkscreen process for the application of decorative prints on glass to be thermally stressed, comprising:

applying an enamel-free paste with a matrix based upon a Si-polymer that can be obtained by the hydrolysis and condensation of at least one silane of a general formula $R_xSi(OR')_{4-x}$ with at least one polysiloxane of general formula $[R_2SiO]_y$, or $R_3Si\text{-}(O\text{-}SiR_2)_y\text{-}O\text{-}SiR_3$, respectively, including

said radicals R can independently be alkyl, aryl, arylalkyl, alkylaryl or H;

said radicals R' can independently be H, methyl, ethyl, n- or i-propyl, n-, iso-, sec- or tert-butyl;

x represents 0 or 1 (for the first silane);

x represents 0, 1, 2, 3, or 4; and

y represents a whole number, which is at least 2 and can be approximately infinite;

wherein said paste additionally includes a high-boiling organic solvent with a boiling point of 100°C or above, and a pigment as the solvent, but contains no alcohol with a boiling point of substantially below 100°C onto the glass to be decorated; and

subjecting said paste and said glass to a thermal burning-in.

39. (Rejected) The method according to claim 38, wherein said burning-in occurs substantially at about 250-280°C.

40. (Rejected) The method according to claim 38, wherein said-burning-in is preceded by a drying step substantially at about 150 to 180°C in order to remove at least said high-boiling organic solvent, as well as possibly said thickener, or said thixotroping agent.

41. (Rejected) The paste according to claim 26, wherein the nanoparticles take the form of at least one of the oxides of Si and Al.

42. (Rejected) The paste according to claim 21, substantiating without any heavy metals or their oxides.

EVIDENCE APPENDIX

None

RELATED APPEALS APPENDIX

None